

QUARTERLY REPORT

FOR JANUARY 1993 THROUGH MARCH 1993

**OPERABLE UNIT 1
IM/IRA TREATMENT
FACILITY**

PREPARED BY

**ENVIRONMENTAL RESTORATION
FACILITIES OPERATIONS MANAGEMENT**

EG&G ROCKY FLATS, INC.

**DOCUMENT CLASSIFICATION
REVIEW WAIVED PER
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APRIL 1993

EG&G ROCKY FLATS PLANT
1993 First Quarter Report for
OU-1 IM/IRA Treatment Facility

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April 30, 1993

Quarterly Operations Report for Jan., Feb., and March of 1993

at

Operable Unit No. 1 IM/IRA Treatment Facility

INTRODUCTION

The Operable Unit No. 1 (OU-1) treatment facility located on the 881 Hillside in Building 891 is responsible for treating groundwater collected from the 881 Hillside area. The water is collected in a french drain (similar to an underground dam) located south of Building 891 on the 881 Hillside and pumped to the influent storage tanks located at Building 891. Next, the water is treated with a ultraviolet/hydrogen peroxide unit and a four step ion-exchange unit to remove volatile organic compounds, uranium, total dissolved solids (TDS), total suspended solids (TSS), cations and anions, and selected metals. After treatment, the water is stored in one of three effluent storage tanks until laboratory sample results verify that the water is acceptable for discharge into the South Interceptor Ditch (SID).

REPORTS/CORRESPONDENCE

The following documents were reviewed and modified during this reporting period:

- OU-1 Sampling and Analysis Plan (SAP) (Final Jan. 18), Rev. 1
- CH₂M Hill Site Specific Health and Safety Plan (Final Feb. 5, 1993), Rev. 1

SAMPLES

Water samples are taken at OU-1 to characterize the influent groundwater, assure that neutralization water from regeneration of the ion exchange system is acceptable for the 374 Evaporator, monitor the ion exchange resin performance, and to verify that all discharge standards are met. All samples that must meet EPA and CDH criteria are sent to independent, off-site laboratories. Water that is sent to the 374 Evaporator is analyzed for pH and gross alpha in the 881 General Labs. All discharged water met the required ARAR's. A summary of the samples taken during this recording period can be found in Table 1, 1993 FIRST QUARTER SAMPLES FOR OU-1 IM/IRA.

The French Drain Performance Monitoring Plan (FDPMP) requires additional sample data for monitoring french drain performance. The FDPMP requires groundwater level measurements of designated french drain monitoring wells (10092-11092, 39991, 45391, 4887, 35691, 31491, and 4787). Additionally, quarterly water quality sampling of the wells is required.

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Table 1
1993 FIRST QUARTER SAMPLES FOR OU-1 IM/IRA

SAMPLE #	LOCATION	CONSTITUENT	STATUS
FT00126ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.
FT00127ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.
FT00128ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.
FT00129ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.
FT00130ITU1	881 Footing Drain	VOA, Mtls, WQ, Rads	Accept. for 374 Evap.
FT00131ITU1	Sample not sent	Sample not sent	Sample not sent
FT00132ITU1	UV Influent	VOA, Mtls, WQ, Rads	On file
FT00133ITU1	Neutralization tank	VOA, Mtls, WQ, Rads	On file
FT00134ITU1	881 Footing Drain	FT00130ITU1 Dupl.	On file
FT00135ITU1	Blank	VOA, Mtls, WQ, Rads	On file
FT00136ITU1	UV Influent	FT00132ITU1 Dupl.	On file
FT00137ITU1	Blank	VOA, Mtls, WQ, Rads	On file
FT00138ITU1	Neutralization tank	FT00133ITU1 Dupl.	On file
FT00139ITU1	Blank	VOA, Mtls, WQ, Rads	On file
FT00140ITU1	Effluent tank T-206	VOA, Mtls, WQ, Rads	On file
FT00141ITU1	IX Influent	VOA, Rads, NO ₂ /NO ₃	Lab Analysis Pending
FT00142ITU1	IX-1 Effluent	VOA, Rads, NO ₂ /NO ₃	Lab Analysis Pending
FT00143ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.
FT00144ITU1	881 Footing Drain	VOA, Mtls, WQ, Rads	On file
FT00145ITU1	UV Influent	VOA, Mtls, WQ, Rads	Lab Analysis Pending
FT00146ITU1	UV Influent	FT00145ITU1 Dupl.	Lab Analysis Pending
FT00147ITU1	Blank	VOA, Mtls, WQ, Rads	Lab Analysis Pending
FT00148ITU1	881 Footing Drain	VOA, BNA/PCB/Pest, Rad screen	On file
FT00149ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.
FT00150ITU1	Neutralization tank	Rad screen	Accept. for 374 Evap.

(collection well)

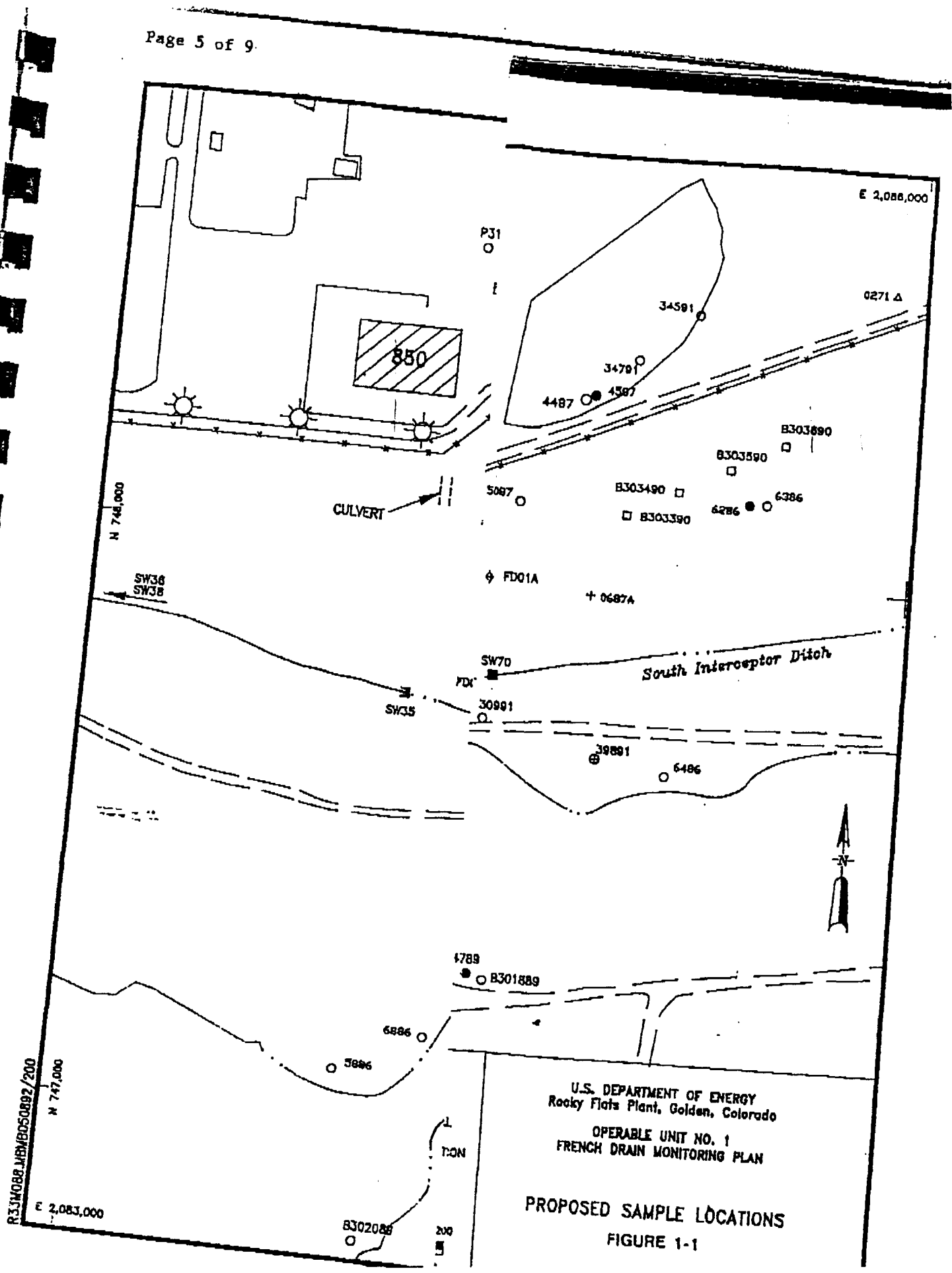
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Groundwater level measurements were obtained from 15-September 1992 through 26-March 1993. Eleven of fourteen downgradient wells were found to be dry or exhibited water levels that are dropping consistently over time. Refer to Drawing Figure 1-1 for well locations and Table 2 for correlation of well numbers. Wells 39991, 45391, and 10492 exhibited measurable water levels. Well 39991 (MW-1) is believed to have been damaged or collapsed and is therefore not considered valid data at this time. Well 10492 is located near the western termination of the french drain and may be subject to groundwater flow from areas west of the drain. Well 45391 (MW-2), requires further evaluation to determine a cause for unexplained groundwater fluctuations found at this location, and is therefore inappropriate for discussions of the french drains' effectiveness. The two wells upgradient of the french drain (35691 and 04887) remain wet as expected (35691 has slightly lower water levels and 04887 has significantly higher water levels compared to pre-construction water level measurements).

French Drain Monitoring wells were sampled quarterly during the period 15- September 1992 through 26-March 1993 for pesticides, inorganics, volatiles, semi-volatiles, and radionuclides. Analysis of this data shows minimal presence of target contaminants in the downgradient wells. The presence of somewhat elevated levels of iron, manganese, and selenium were detected at well locations 10692 (located west of the western termination of french drain) and 10492 (located downgradient of french drain near western termination). However, these are naturally occurring elements, and the detected levels in the water seem to fall between dissolved and total background estimates; and would therefore not be considered be contaminants. The presence of volatiles and semi-volatiles (primarily low level) was detected at 10092, 10492, 10592, 10692, 10792, and 11092. Benzene compounds (including toluene), methylene chloride, and tetrachloroethene were the primary contaminants found in the water. In addition, unknown volatile or semivolatile compounds were found at 10492, 10592, 10692, and 10792. These compounds will have to be identified through TIC analysis during the next sampling event. Groundwater levels at Well 10692 have stabilized at 5-6 feet below the ground surface. Groundwater near the surface at this location may be migrating to wells 10592 and 10492, and therefore might impact the quality of water in these wells which tend to have deeper groundwater tables. In general, volatile and semivolatile compounds that were identified during sampling were below ARAR's for those compounds having ARAR's.

As discussed with DOE, the ground water monitoring program has detected indications of slump block movement on the 881 Hillside. Within the last quarter, wells 07191 and 35691 have both bent sufficiently to require smaller bailers to obtain samples. No indications of external damage were noted, and it is felt that the bending is due to pressure of moving slump blocks. Since more information is necessary to further evaluate this situation, the Hillside movement will be tracked via survey control points in order to obtain quantitative data.



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TABLE 2

PROPOSED WELL NUMBER	WELL NUMBER
FD01A	10092
FD02A	10192
FD02B	10292
FD03A	10393
FD03B	10492
FD04A	10592
FD05A	10692
FD06B	10792
FD07B	10892
FD08A	10992
FD09A	11092
MW01	39991
MW02	45391

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881 FOOTING DRAIN FLOWRATE MEASUREMENTS

The 881 footing drain seems to be the largest contributor of water into the french drain collection system. The flowrate from the footing drain seems to be directly related to precipitation (refer to attached Chart 1). Heavy snows in late October 1992 and late November 1992 increased the flowrate from 2.5 GPM to 6.0 GPM. Flowrates steadily declined from 6.0 down to 2.9 GPM in mid February due to the lack of precipitation in December and January. However, large flowrates (10 GPM) were again experienced at the end of the quarter. This was associated four consecutive days of precipitation. Flowrates of this magnitude generally require additional operating hours beyond the normal 40 hours per week.

MAINTENANCE/PROBLEMS

No significant system malfunctions or maintenance difficulties were experienced during this quarter of operation.

ANTICIPATED OPERATIONS FOR NEXT QUARTER

Typically, the months of April and May bring more precipitation, causing increased groundwater flow into the collection gallery. During the second quarter last year, operations were extended to 10-hour days, 7-days per week. Operating hours will be increased accordingly to assure that all groundwater is collected and treated.

The operation of the OU1 Treatment Facility has been subcontracted to Resource Technologies Group (RTG). The changeover from IT to RTG will take place on April 30, 1993 after RTG has completed a six week period of on-the-job training.

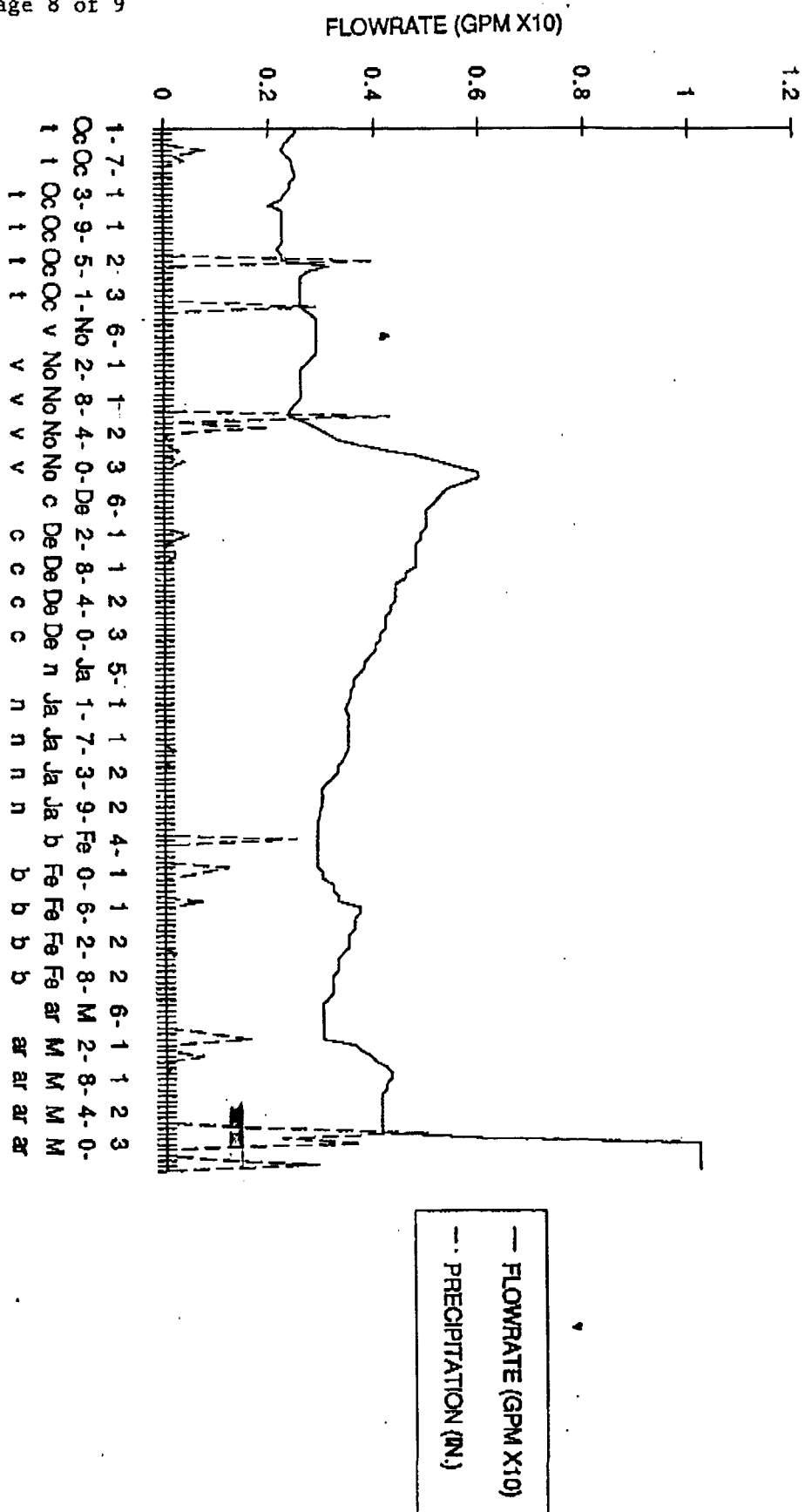
ENVIRONMENTAL COMPLIANCE

The OU-1 IM/IRA Groundwater Treatment Facility met all discharge standards last quarter for discharged water. No releases of hazardous materials or wastes to the environment occurred.

A real-time gamma analyzer was installed on the system effluent to monitor the system radiological removal efficiency.

The purchase and installation of an in-line gas chromatograph is currently in progress. The installation of the GC is scheduled to be completed in August 1993.

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SUMMARY/CONCLUSIONS

A total of 205,000 gallons of water was treated and 77,500 gallons were discharged during the quarter. The treatment totals to date are 1,000,300 gallons treated and 800,500 gallons of treated water discharged.

Steps are underway to upgrade the treatment system's real-time analysis capabilities by adding an in-line gas chromatograph to monitor treated effluent for organics.

Data obtained from sampling and water level measurements seems to indicate that the french drain is performing adequately. Wells downgradient of the french drain indicate that the system is preventing the flow of groundwater in this area from reaching the South Interceptor Ditch. Further testing and evaluation will have to be performed in order to understand the fluctuations found in well 45391.

Analysis of sample data showed very little contamination in the downgradient wells of the french drain. Somewhat elevated levels of iron, manganese, and selenium were discovered; primarily near the west end of the french drain. However, these elements are natural and probably not of concern. Identified contaminants found on the downgradient side of the french drain were primarily low level. TIC analysis will have to be performed in order to identify unknown volatile compounds that were found in several monitoring wells (two downgradient and two west of french drain) on the hillside.

The results obtained from data collection up to this point have been somewhat helpful in developing initial ideas about the performance of the overall treatment system. However, in many areas additional data is needed in order to perform proper statistical analysis where more definite conclusions may be drawn.